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ABSTRACT

Undergraduate education at large research universities and the importance of assessment are considered. After summarizing some special characteristics of large research universities, two problems are addressed: the lack of purposiveness in undergraduate education, and the widespread failure to achieve the learning outcomes professed for undergraduate education. The potential of assessment to introduce more coherence and purposiveness into undergraduate education in large research universities is discussed. Limits of assessment in solving the problem are also considered, with attention to other aspects of the problem: funding for undergraduate education, and integration of undergraduate education with the other functions of research universities. Principles to guide the design of assessment activities include: (1) assessment of learning outcomes should be part of a framework that is accepted by faculty and includes deliberation about what students should learn, inquiry into what they do learn, and action to adjust educational practices; (2) the assessment framework should be accepted by students and employers; (3) assessment should emphasize continuities with learning in elementary/secondary education; (4) formal assessment should be employed; and (5) the use of intensively evaluated pilot programs should be increased. (SW)

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What Undergraduates Learn: The Role of Assessment in Large Research Universities

by
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WHAT UNDERGRADUATES LEARN: THE ROLE OF ASSESSMENT IN LARGE RESEARCH UNIVERSITIES

Involvement in Learning, the report of the National Institute of Education study group on the conditions of excellence in higher education, while recognizing the astonishing accomplishments of American higher education in the four decades since 1945, finds important weaknesses in the quality of teaching and learning for undergraduates in American colleges and universities. The report recommends increased use of assessment of "knowledge, capacities, and skills developed in students by academic and co-curricular programs" as a tool to improve learning. This paper explores the implications and relevance of this recommendation for undergraduate education in large research universities. I am going to leave intentionally vague what "large research university" includes; I expect that what I have to say will have most relevance for universities that share many characteristics with the public universities in the Association of American Universities.[1]

The paper falls into five parts:

- Part one sets the stage by summarizing some special characteristics of large research universities.
- Part two places the problem. The problem has two parts: (a) lack of purposiveness in undergraduate education and (b) widespread failure to achieve the learning outcomes we profess for undergraduate education. It is perceived to be a problem by some faculty members and administrators inside the higher education community; less so, now, by students, employers, and other external constitutuencies.
- Part three discusses the potential of assessment to introduce more coherence and purposiveness into undergraduate education in large research universities. The main point I make is that in order to play this role, assessment of what students learn must be embedded in a larger institutional framework that has the understanding and trust of the faculty and includes deliberation

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[1] The period of the thinking and writing of this paper has coincided with the planning of collaboration among my university and four other public research universities to improve undergraduate education. The persons involved in the planning are Carol A. Cartwright, Vice Provost and Dean of Undergraduate Programs at the Pennsylvania State University, Thomas M. Eakman, Executive Assistant Vice President for Academic Affairs at the University of Illinois, Robert Holbrook, Associate Vice President for Academic Affairs at the University of Michigan, and Donna H. Kerr, Vice Provost at the University of Washington. I have learned much from them; discussions of this group inform and shape what I have put in this paper in more ways than I can say. I am indebted also to Theodore Marchese, who gave encouragement and made deft editorial suggestions. Naturally I alone am responsible for the particular views expressed.

about what students should learn, inquiry into what they do learn, and action to adjust educational practices in the light of deliberated goals and observed results.

- Part four discusses the limits of assessment in solving the problem. I argue that in addition to assessment two other factors, funding for undergraduate education and the integration of undergraduate education with the other functions of research universities, will have to be addressed in a serious attack on the problem.

- Part five suggests a way of thinking about the importance of these issues.

Section 1. Large Research Universities

Since learning is learning, and assessment is assessment, one might well ask how there can be a separate topic of the role of assessment in large research universities. The explanation turns on the special character of these universities as organizations. They are large, numbering their undergraduates in the tens of thousands and their graduate and professional students in the thousands. They have multiple missions of research, graduate education, professional education, and extension education as well as undergraduate education. They are led and managed in a decentralized way, with departments having considerable autonomy. This combination of features means that any strategy for managing or inducing change in organizations will have to be specially adapted to this special setting.

Since this paper will focus on problems in undergraduate education in large research universities, it is worth reminding ourselves at the outset that the research universities in the United States are a remarkable set of institutions, remarkable for size and wealth, remarkable for stability, remarkable for their prestige and influence in the whole educational system. They are remarkable especially for the developed human talent concentrated in their faculties. When the imperfections, stresses, and problems of these institutions are put on the table, the undeniable fact remains: if any institution in the society wants ideas for how to do things in new ways, wants deep and pointed criticism, wants mastery of ways of knowing and inquiring, wants command of what has been thought and tried or is being thought and tried in our society or any place in the world, then the faculties of research universities are the main and great resource. This resource and the set of institutions that create and nurture it are the envy of the world. Problems in undergraduate education should be seen in this context.

Problems in undergraduate education in large research universities should also be seen in the context of the tremendous resources these universities have for a unique kind of high quality undergraduate education. They have marvellous research libraries; they have, or have routine access to, state-of-the-art equipment in every area of inquiry, from computers to telescopes. They have as teachers a research faculty, people who are not only current in their fields, but are creating new knowledge on the frontiers of their fields. Thus the teaching of this faculty can be absolutely first-hand; the students can learn not only what is known, but what the new questions are, and what methods and strategies are being shaped to answer them. Even in lower division introductory courses the excitement and potential of a subject matter area can be conveyed by teachers who experience the excitement in their daily work. The basic challenge for large research universites is to realize this potential for excellent undergraduate education without damaging the research activity which creates it.

Section 2. The Problem

No one recommends that assessment be done just for the fun of it, for its own sake; rather, assessment is a tool for addressing problems and weaknesses. Clarity, not to say cogency, requires us to begin with a statement of the alleged problems and weaknesses and also with some consideration of who has identified these problems and weaknesses and is urging us to turn our attention to them.

There is a more urgent reason to begin by trying to state the problem, because it is a striking and even shocking feature of the Involvement in Learning that it gives virtually no reasons for thinking that there is any problem at all. This should puzzle us. I want to spend a few paragraphs developing and then solving this puzzle.[2]

It is illuminating to notice first what is not being urged, in this report, as problem and weakness. It is not parking, or food service, or dormitories. It is not efficiency of the registration or financial aid processes. Nor is it the fairness of admission or financial aid policies. The problems and weaknesses are alleged to be at the center of undergraduate education, in the quality of teaching and learning.

Moreover, the problems and weaknesses are alleged to be in the quality of teaching and learning as they are at present. The argument is not that the United States is falling behind some of the other industrial democracies in economic competitiveness because our educational system twenty or thirty

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[2] I am indebted to Donna H. Kerr for pointing out to me this feature of the NIE report, and also of the reports from the Association of American Colleges and the National Endowment for the Humanities.

years ago was deficient in such and such ways. No evidence of this kind is presented and no claim about the past condition of the system is made. No claim is made that the present condition of undergraduate education is better or worse than the condition twenty or thirty years ago.[3]

Indeed, as one reflects carefully on the report, one realizes that it contains very little evidence and very little argument of any kind. It projects a general atmosphere of deep concern, it makes a couple of dozen plausible recomendations, but of analysis, evidence, and argument it gives little. Through the recommendations one gets a good sense of what the study group thinks undergraduates should be learning, but even granting these goals, there is virtually nothing in the text argues that today's undergraduates are not learning these things.

There is thus a puzzle. The members of the study group are responsible and scholarly people. But the alarm they project outruns the evidence they give. How can this be so?

I suggest that the report be seen as making a criticism that has two parts. First, there is a lack of purposiveness in the way we conduct undergraduate education. Second, given that lack of purposiveness, there is little reason to believe and much reason to doubt that the purposes we profess for undergraduate education are being achieved.

The charge of lack of purpose can be posed in the form of a Socratic dialogue:

Socrates	Do you regard and conduct undergraduate education as a purposive activity whose purposes can be described in terms of what the student learns as a result of participating in and completing the activity?
Us	Yes.
Socrates	Then why don't you spend time defining the purposes?
Us	We do. Listen to any welcoming speech for freshmen and parents and you will hear of the purposes, of analytic and creative thinking, of clear, graceful writing and thoughtful, accurate listening, of internalizing democratic values, of the grasp of the present functioning and historical development of our society and its institutions.

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[3] I am indebted to Thomas M. Eakman for pointing out to me this feature of the report.

Socrates — Noble purposes. Has the faculty been pressed to say how how the purposes are being realized in its courses?

Us — No.

Socrates — They implement them without being pressed? There is a syllabus for every course and in the syllabus for a course it is carefully explained what the student can expect to learn in that course? And if I read through all the syllabi for all the courses in a student's program I would have revealed to me in considerable specificity educational purposes along the lines of those in the welcoming speech?

Us — Partially, but mainly syllabi emphasize content, not skills and values.

Socrates — I am puzzled about something else. In reading through your catalogue I notice that you lecture to your students a lot, especially to students in the lower division. Yet when you describe the purposes of undergraduate education, these involve depth and sophistication of thinking, analysis, reasoning, communication, types of learning the achievement of which requires active learning. Why do you then provide so much passive learning?

Us — The delivery of active learning is expensive and labor intensive; to provide more of it would take faculty time away from research.

Socrates — You change the subject. We were talking about what students are learning and now you are talking about what the faculty is learning. Perhaps you carefully monitor what students are learning and find that the mix of passive and active learning opportunities you are providing your students is achieving the learning outcomes which you announce in speeches?

Us — No. We do virtually no assessment of learning outcomes.

Socrates — Surely you are too modest. Given the knowledge, skills, and values you expect your students to acquire, I assume that when you are about to award a student a baccalaureate degree you examine the student, you engage him or her in dialogue to determine whether the student has these skills and values? You analyse the student's program of study to see what explains the learning and lack of learning, if you find any? You make adjustments accordingly in the

programs of new students who are starting on the path of learning?

Us — Seldom.

Socrates — How can your teaching have the purposes you claim? Purposive conduct involves constant review and adjustment of goals, plans, and actions in the light of results. To profess the goals without undertaking the follow-through is hollow. I am sure I have misunderstood you. Let us take one goal, writing. I assume that you keep track of the courses in your curriculum that require writing and of the pattern of courses in a student's program that give opportunity to practice writing?

Us — No; we require one or two special writing courses but we do not know where else in the curriculum writing occurs.

Socrates — You are either disingenuous or confused.

This is the first part of the criticism which I believe is lodged by Involvement in Learning. Because of the kind of criticism it is, those of us who have been students and professors in universities will be able to judge its validity without needing to review evidence. Let us take as an analogy shooting at a target from some distance away. If we are intending to hit the target and if someone alleges that a large proportion of our shots are off target, we need evidence, we need a closer look. But if we are shooting randomly, having no target in mind, and someone alleges that this is what we are doing, we recognize the allegation as correct; we do not need evidence about our own purposes, or lack of them. Similarly for the present criticism concerning the purposiveness of undergraduate education: those of us who work in these institutions do not have to look at evidence for confirmation or disconfirmation, we need only review our own participation in the forums that generate purpose in universities.

The second part of the criticism I find in Involvement in Learning follows easily, once the first is admitted. The goals we profess for undergraduate education are ambitious. If we were trying our hardest we would do well to meet them consistently. If we are hardly trying, it is doubtful that we meet them often.

Because they know the institution from the inside, university faculty members and administrators are in the best position to make this criticism. As far as I can see, they are the ones who are doing so. Students, employers, and public officials may be listening sympathetically from the sidelines, but with few exceptions they are not initiating criticism.[4] Thus

[4] I am indebted to Mary Corcoran for pointing this out to me.

it was news when seniors at UCLA organized last spring to complain about the education they had received.[5] It should be said also that the criticisms are not coming from all faculty, or all administrators, or from official representatives of faculty or administrators in convention assembled, but from a subset of thoughtful and concerned faculty members and administrators. I do not know how widely the concerns they express are shared by their colleagues; I suspect fairly widely.

Is the criticism valid? The Socratic dialogue I have set up, and I believe this is true of the report also, gives too gloomy a picture of what is going on in undergraduate education. After all, distribution requirements and the major are two pillars of purposiveness in undergraduate education and they are sometimes implemented to marvellous educational effect. It would be unfair and misleading to paint a picture of the current situation that ignores the thousands of imaginatively planned and thoughtfully implemented programs and countless fine achievements in learning and teaching on the part of students and faculty in the nations colleges and universities, including the large research universities. Nevertheless, I think that the criticism is more valid than not and that it points to areas where improvement should and can occur. While I do not want to give a full defense of it here, I do want to defend it against two possible replies.

Someone might try to rebut the criticism by saying that it springs from a romantic and unrealistic attachment to one model of undergraduate education, the model provided by the small liberal arts college, located in the country or in a small town, with full time residential students pursuing and completing degrees in four years. While this may be a correct diagnosis of the motivation of some who pose the challenge, it does not have to be part of the critic's motivation and is not part of the content of the criticism. For the criticism is not that undergraduate education in our universities does not have the kind of purposiveness of a four year residential liberal arts college, it is that it has too little recognizable purpose of any kind. Another model of purposiveness is closer to hand in large research universities, that of graduate education. Undergraduate education in these universities does not have that kind of purposiveness either. The request is not that undergraduate education conform to any existing or preconceived model of purposiveness. A new model, appropriate to the realities of the large research university, will do fine.

Some experts in the ways of large organizations may say that it is a mistake to expect purposiveness on any substantial scale in large research universities, that these universities cannot be understood on the model of business firms, which are guided by an overarching purpose, but rather on the model of nation states, which are containers in which conflicting or

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[5] See the article "Seniors Assail Undergraduate Education at UCLA Campus" by David G. Savage, Los Angeles Times, May 23, 1985, Part I, p. 3.

simply disparate purposes work themselves out in peaceful ways. We do not expect all the researchers on a university faculty to be pulling in the same harness and, indeed, research would suffer if they did. Similarly we should not expect the teachers (= the researchers, they are the same persons) on the faculty to pull together in the same harness to deliver undergraduate education with a recognizable and defensible purpose.[6] But can we make sense of something deserving the name of undergraduate education which is so faintly purposive? It seems to me that to take this line is to agree with James Coleman's argument that research universities should get out of the business of undergraduate education altogether, because they are structurally incapable of doing a decent job of it.[7]

Section 3. Assessment of What Undergraduates Learn

If part of the problem is insufficient purposiveness, then it is easy to see why a rational person would regard increased assessment of learning outcomes as part of the solution. For purposiveness requires setting goals, planning to meet the goals, acting on the basis of the plans, observing the results of the actions, then adjusting goals, plans, actions, and approach to observation in the light of experience and repeating the cycle. In an educational context, assessment of learning outcomes constitutes observation of results; without this component, the framework of purposiveness collapses. As a general point this is obvious and unexceptionable, but it leaves us in the dark about what assessment to do. I will first suggest some important considerations, or principles, to guide the design of concrete assessment activities in large research universities; then I will draw some conclusions about what should be done.

Consideration one. Assessment of learning outcomes should be part of a framework of deliberation, inquiry, and action that the faculty trusts. There must be deliberation on educational goals and means, there must be design of assessment strategies, there must be actual teaching and delivery

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[6] For an excellent discussion of the organizational complexity of research universities, see Burton R. Clark, The Higher Education System: Academic Organization in Cross-National Perspective (Berkeley, University of California Press, 1983), chapters one and two. By the way, I do not attribute to Clark the defense of the status quo in undergraduate education to which I am replying in this paragraph. It is clear that he thinks it is possible for research universities to sustain coherent, high quality undergraduate education; see p. 24.

[7] James S. Coleman, "The University and Society's New Demands on It," in Carl Kaysen, ed., Content and Context: Essays on College Education (New York, McGraw-Hill, 1973), pages 359-399.

of educational programs; what this principle says is that the faculty must trust and "own" the whole framework.[8]

It is useful to reflect on factors that can defeat the creation of this necessary trust.

The faculty will not trust the framework if they do not participate in its construction. There may be some group of professionals in the society who would submit to or even welcome outside experts who would analyse and evaluate the services the professionals provide and tell them how to improve. Faculties in research universities are not this group. The faculty will not and should not permit this kind of disempowerment. The members of research faculties <u>are</u> the experts with respect to most of the institutions in the society; they have a long tradition of pooling their expertise to govern the university; know too much about the workings of experts and the ways of expertise to turn their own institution over to a subset of experts. Nor should they; members of research faculties are makers of knowledge and makers of education; it would damage the faculty role, and reduce the attractiveness of the role to talent, to turn over to experts substantial control of either activity.

The faculty will not trust the framework if they do not respect the intellectual quality of the approach to assessing learning outcomes. This respect is not easy to win. Much of the faculty is legitimately fearful that outside agencies may impose paper and pencil tests of such complex skills and attributes as critical thinking, problem solving, and moral reasoning. Extensive dialogue would have to proceed any assessment of such skills and attributes. Perhaps this point can be brought home by considering some analogous already existing assessment activities. Student evaluation of teaching, as it is carried out in research universities I know of, enjoys little respect and is tolerated because it has so little effect. The Graduate Record achievement examinations are not taken seriously as indicating mastery or promise in a discipline.

The faculty will not trust the framework if there is no serious likelihood that the deliberation and the inquiry will genuinely guide the allocation of resources. It will be agreed that students should be or become good writers; it may even be possible to get agreement on an approach to assessing students' writing skills; all of this will be for nothing if students' enrollment in courses and the amount of writing in the curriculum will be what they are independently of what is learned through assessment. The framework must include policies that make it clear that if sufficient need is shown, significant resources will follow. Otherwise the deliberation and the inquiry will be, and will be seen to be, idle

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[8] The importance of faculty invovlement in the design of assessment projects emerged strongly in the discussions of the five public research universities mentioned in footnote 1 above.

exercises. Assessment will also be an idle wheel, failing to guide the allocation of resources, if it merely confirms the obvious. The immediate argument against investing any resources in assessment is that we already know how a marginal increase in our budget should be invested in programs, so that resources we might invest in assessment are better spent directly on programs.

The faculty will not trust the framework if in its overall tone and content and especially in its policies for shifting resources in response to evidence about what students are learning it fails to recognize the complex mission of the research university: undergraduate education, graduate education, professional ecucation, and research. Too often documents and programs and policy recommendations directed at undergraduate education sound as if undergraduate education were the only thing the faculty has to attend to. A successful framework will maximize the complementarities between research and undergraduate education and minimize the competition.

If these pitfalls are avoided, increased assessment of what undergraduates learn could enhance the quality of professional life for the faculty. It could lead to more solidly based and so more credible and fair reward and promotion systems. It could make more visible to a faculty member the results of his or her work as a teacher and so introduce an increased sense of efficacy into this side of faculty life. Wouldn't it be wonderful if the learning of our students could have the same visibility as the publication of our articles?

Consideration two. Assessment of learning outcomes should be part of a framework that students and employers trust. Since what faculties aim to teach must have some reasonable consonance with what students aim to learn, students should be brought into the dialogue that shapes learning goals and the means for achieving them. Since most students' motivation for pursuing higher education includes preparation for the world of work, employers should also be brought into the dialogue. This is not to say that the faculty should dilute its responsibility for framing and implementing educational plans, but that the plans will have greater credibility and greater chances of practical success if all who are affected by the plans contribute to their formulation.

Consideration three. We should seek assessment strategies that emphasize continuities with learning in the schools and build on progress in assessment that have been made in the K-12 system. With rates of participation in higher education as high as they are in the United States, it makes sense to view education from prekindergarten through baccalaureate degree as one system, the "K-16 system." If we can cooperate with the schools in strategies for assessment of learning outcomes, for example, in languages, writing, and mathematics, we can increase the effectiveness of this system and spread the costs of developing good assessment instruments.

Consideration four. We should seek opportunities to use formal assessment of learning outcomes to generate a sense of community and shared enterprise in large, complex research universities. In graduate education the department functions as a small community in which natural, face-to-face interactions keep the faculty informed about what the students are learning. We give periodic oral examinations. More than examinations, we are all teaching each others students in our seminars; if I do a poor job in the philosophy of language seminar, you will find out about it when the students are ill-prepared for your theory of knowledge seminar, and you will let me know about the problem. Undergraduate education in large research universities, especially undergraduate education in the lower division, is too large an enterprise for assessment and feedback to work in these informal ways. Undergraduate education is collective action on a large scale, involving faculty across many departments; assessment and feedback will be achieved only by conscious and careful design.[9]

Consideration five. Where complex learning is concerned, we should beware of simple distinctions between learning process and learning product. Some of the goals of the faculty for undergraduate education, at least as members of the faculty are initially inclined to express them, are ambitious and cast in abstract terms: independence of mind, critical thinking, thinking like a physicist (historian, biologist, etc.), sense of democratic values, and the like. These tend to be skills or attributes the building of which requires active learning. When we put these ambitions together with the kinds of formal assessment instruments we actually know how to make, we have a problem, for the ambitions and the instruments do not meet. To point this out is not to take a stand in criticism either of the instrument makers or the faculty, but simply to call attention to a practical problem: if we put the faculty and the instrument makers in a room and tell them not to come out until they have hammered out goals the faculty will own and tests that will determine whether the goals are being achieved, they may never come out. Or they may come out with a "test" that in length, structure, and expense is essentially a course, or a series of courses. We should be ready to accept this latter conclusion and be ready to depend on existing courses, or enhanced versions of existing courses, and on grades in those courses, perhaps with an enhanced and sharpened method of grading, as the best available assessment of some of the complex skills we are trying to help our undergraduates build.

Consideration six. We should look for opportunities to increase our use of intensively evaluated pilot programs. It is well to remind ourselves that large research universities make much use of seed money and pilot programs as a device to foster institutional change. These pilot programs normally receive serious evaluation that includes attention to the

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[9] This point is well made by Peter Ewell, The Self-Regarding Institution: Information for Excellence (Boulder, National Center for Higher Education Management Systems, 1984), pp. 5-6.

difference they make to students' learning. This is local assessment of experimental programs, not the global assessment of undergraduate education the recent national reports recommend, but it is assessment and it is something we are good at and know how to manage. We should look for opportunities to build on this strength.[10]

Consideration seven. We should be pragmatic about issues of scope and scale; we should dare to think small as well as large. If we try to set learning goals and assess outcomes for all of our undergraduates, we may be paralysed, whereas if we think about engineering majors, or pre-med students, or the majors in a single department we can get consensus and go to work. Progress on many small fronts is clearly preferable to stalemate on one.

Having set out this disparate set of considerations, I would like to draw them together in four conclusions or directions for action:

- We should foster dialogue within the faculty about the ends and means of undergraduate education. In some cases, perhaps in many, this will lead to an improved meshing of ends and means even without increased use of formal assessment of what students are learning. In other cases, formal assessment will emerge as a necessary tool to advance the dialogue and to initiate or adjust programs to mesh ends and means. Students, employers, and colleagues in the other parts of the education system should be brought into the discussion. (This conclusion draws on all the considerations.)

- We should start with the lower division. This is where we have the largest and most complex interaction of faculty and students, and so the largest need for creative devices to shape a purposeful learning community (consideration four). It is also the locus of continuity with the high schools (consideration three).

- We should empower individual faculty members and groups of faculty members, from coalitions of two or three to whole departments, to introduce greater purposiveness into their teaching by providing workshops on assessment strategies for courses and groups of courses and by encouraging experiments in designing courses, course clusters, and course sequences (consideration one, four, six, and seven).

- We should look for points of change in our institutions and in the higher education system and focus assessment on these points. Assessment will not be useful or viable if it does not guide the allocation of resources, so we should look for areas toward which new resources will flow. If new resources are going into the education of engineers, now may be the time to evaluate what engineering students

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[10] I am indebted to Robert Holbrook for emphasizing this point to me.

are learning. If a legislature passes a law enabling eleventh and twelfth grade students to take courses at the university, bring their state school aid money with them to pay tuition, and receive both high school and university credit for the courses taken (the Minnesota Legislature has done this), now may be the time to assess learning in the parts of the lower division that receive these new students. This conclusion comes primarily from consideration one, but also fits with consideration six.

Section 4. Limits of Assessment

The original problem had two parts: (a) lack of purposiveness and (b) a shortfall from the learning outcomes we profess for undergraduate education. I think it is clear that increased assessment of what undergraduates learn can contribute to solving the problem. But there are limits to what assessment can do. In this section I sketch two other factors that must be addressed before the problem is solved: funding for undergraduate education and the integration of research and undergraduate education.

Funding for undergraduate education. If we move to assess what undergraduates are learning and to identify specific shortfalls in learning outcomes, we will be faced with a painful dilemma: reduce our goals for or increase the resources we invest in undergraduate learning. To some degree we will be able to reallocate existing resources to improve outcomes; we may be imaginative enough to go far with this necessary strategy. But consider writing. We know well enough what it takes to help students become better writers. It takes practice. It takes courses in which writing is an integral tool for learning. We do not know whether the proportion of courses in a student's program that have this character should be one-third, or one-half, or two-thirds; improved assessment may teach us this. We do know that the limiting factor in creating the courses is faculty time. More faculty time devoted to undergraduate writing must come from other activities, in research or graduate education, of existing faculty or from new faculty. Assessment of what undergraduates learn will therefore tend to increase tension between undergraduate education and other functions of the research university.

The integration of research and undergraduate teaching. I will dramatize my point here by exaggerating it: the single most important thing that could be done to improve undergraduate education in research universities would be to seriously and systematically assess the quality of research. Now let me backtrack.

If a neutral observer were to look at these institutions from the outside, knowing that they combine the functions of research and undergraduate teaching, their most astonishing feature would be the lack of integrated management of the two functions. The observer would naturally

expect that an institution combining these two functions would allocate resources to sub-units that carry out the functions on the basis of their total productivity taking into account both functions, that the tradeoffs between teaching and research would be managed. Though some of this kind of management goes on through informal mechanisms, it is haphazard and partial. Why is this so?

Though universities have combined research and undergraduate teaching since the late nineteenth century, the research university system as we know it has been created since 1945. It is the product of tremendously increased enrollments in higher education and, especially, of tremendously increased federal funding for research. The funding for undergraduate education, in the public research universities, is largely from the state governments and from student tuition; because of the great enrollment surge, and because of the creation of alternative systems of postsecondary education, especially community colleges, that absorb fluctuations in postsecondary enrollment, this state funding is reliable and predictable; it can be, and is, treated as base funding that varies only incrementally. The funding for research is largely from the federal government and is allocated, not to universities, but directly to individual faculty researchers and to small teams of faculty researchers for specific and relatively short range projects on the basis of peer review. So we find one relatively secure stream of funds, for undergraduate education, and one highly insecure stream of funds, for research. The first stream of funds is genuinely managed by the administrators of the university, theirs is the responsibility and authority to allocate funds in this stream. The second stream of funds is administered by a federal bureaucracy with strong involvement of the academic disciplines; all university administrators can do to influence the flow of these funds is to create favorable conditions for their faculties to compete for funds.

To see how singular this arrangement is, imagine the opposite arrangement, in which research is securely funded on the basis of some slowly fluctuating variable, such as per capita GNP, and undergraduate education is funded by project grants on the basis of peer review.

One does not have to be a political genius to predict what will happen in this situation: there will be at all levels a pull of attention and energy away from the securely funded function toward the insecurely funded function. It is worth saying again that this structure for combining research and education is not old; it is the result of a burst of institutional creativity after World War II.

Some thought has been given to changes in these arrangements that help determine the balance that is struck between research and undergraduate teaching. The Newman task force of a decade ago thought about this issue and produced a sensible recommendation:

> Since World War II, federal support has created a vast reward system of resources, legitimacy, visibility, and prestige for institutions and faculties engaged in academic research. We recommend that the federal government now consciously address itself to the creation of comparable incentives and rewards for those concerned with teaching and learning and with the establishment of new educational enterprises. Existing agencies such the National Science Foundation or the National Endowment for the Humanities should be sources for the expansion of the federal role in this area, as should the activities of two new agencies, the National Institute of Education and the Fund for the Improvement of Post-Secondary Education.[11]

This recommendation has not been acted on; the reader can judge what the prospects for it are in the current Washington climate. The actual changes on the federal level are of quite another kind, a levelling off of funding for basic research from the National Science Foundation and the National Institutes of Health, substantial reductions in the National Endowment for the Humanities, and, apparently, a new focus for both basic and applied research funding for frontier-technology defense systems, to be administered by the Department of Defense. What interest the Department of Defense may have in the effects of its funding strategies on undergraduate education remains to be seen.

Alvin M. Weinberg has suggested strategies for funding research that would, if adopted, have an impact on undergraduate education. He has suggested, for example, that research funding should be based on two kinds of criteria, internal criteria that answer the question, "How well is the science done?" and external criteria that address the question, "Why pursue this particular science?" (Weinberg is writing about the sciences and I have retained his language; his points obviously apply to intellectual disciplines more broadly.) Internal criteria can be formulated and applied to cases by experts in the scientific discipline; this is what happens in the current federal funding systems when peer panels review proposals for project grants. But the formulation and application of external criteria would require review panels that involve experts from neighboring scientific disciplines and citizens who are qualified by wisdom and experience. We have not really tried mechanisms of this kind. Such mechanisms would bring disciplines and departments under new tensions that would not directly benefit undergraduate education, but I believe they would do so indirectly because of the integration of knowledge and consciousnesss of the social relevance of new knowledge they would foster.[12]

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[11] The Second Newman Report: National Policy and Higher Education (Cambridge, The MIT Press, 1973), page 112.

[12] Alvin M. Weinberg, Reflections on Big Science, (Boston, MIT Press, 1967); see especially the chapters "Criteria for Scientific Choice," pp. 65-84, and "Universities and Disciplines," pp. 145-163.

Weinberg has also suggested that research funds should be given to universities as a reward for excellence in teaching. In support of this suggestion, Weinberg observes that such a policy would give the research professor a stake in the university's mission. Federal policies along these lines would of course have earth-shaking effects. More modest state and university funds used in this way could still make a big difference to the quality of undergraduate education.[13]

From the point of view of institutional design, the problem is to provide enough nurturing and support to foster vigorous, creative intellectual disciplines while at the same time pulling the disciplines into the kind of connection with young minds that constitutes high quality undergradute education. The first aim we accomplish by giving academic departments, which are the local chapters of the disciplines, considerable autonomy and power, autonomy and power that have been dramatically increased by the federal policies for funding research. This leaves us with the problem of putting departments under appropriate tension to bring about high quality undergraduate education. The problem of designing these mechanisms of appropriate tension, which is the same as the problem of integrated management of research and undergraduate education, is only partially solved.[14]

These issues of funding and of the integration of undergradute education and research are fundamental to the character of research universities. They will have to be addressed if assessment of learning outcomes is to lead to serious improvements in the purposiveness and the quality of teaching and learning in research universities.

Section 5. The Importance of the Issue

The quality of undergraduate education in research universities is important because these institutions set standards, public perceptions, and expectations for much of the education system and because they provide

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[13] Ibid., p. 163. It is worth noting the new effort of a group of liberal arts colleges to attract more federal research funds, which I regard as an important positive development, would receive a great boost if Weinberg's suggestion were adopted. See David Davis-Van Atta, Sam C. Carrier, and Frank Frankfort, Education America's Scientists: The Role of the Research Colleges (Oberlin, Office of the Provost, 1985).

[14] There is an excellent discussion of the competition between departmental functions, such as research, and university functions, such as undergraduate education, in Daniel Alpert, "Performance and Paralysis: The Organizational Context of the American Research University," Journal of Higher Education, vol. 7 (June 1985), pp. 242-281.

directly the undergraduate education for large numbers of the ablest and most favored students in the society, people who as graduates will be leaders in all of the institutions of the society. The quality of their minds and values will have a great part in determining what kind of society ours will be.

In this context it becomes an important issue that many thoughtful faculty members in research universities find the undergraduate education they are providing dishearteningly purposeless.

There is a dispute between Rousseau and Michael Walzer that sums up the issue. Rousseau had asserted that teaching should not be a career: "Above all, do not make the mistake of turning teaching into a career." Rather, teaching should be done by people who are spending a few years at it and then moving on "to fill not more important posts, for there is none more important, but more prestigious and less exacting ones."[15] Rousseau does not argue for this view; presumably he feared that career teachers would become stale and pedantic and that the education they provided would become irrelevant to the life of the society.

Walzer criticizes Rousseau's view on the ground that schools have a special normative character which springs from and is supported by several factors: that schools mediate between family and society, that schools constitute a special environment in which students and teachers are protected from external pressures, that there are intellectual disciplines in which teachers are qualified, and that these qualified teachers are committed to share their disciplines with their students. These requirements militate against "the practice of leaving education to the old men and women of the larger community or rotating ordinary citizens through the faculties."[16]

In a curious way the arrangement Rousseau recommends is partially realized in research universities. In self-concept, at least, many faculty members are researchers and scholars first and teachers second. For some, being a teacher is not part of their identity at all, but something that they happen to do. Most would reject the description of their career as "teacher" and would accept "physicist," "historian," or "psychologist." Some faculty members have had a kind of intense involvement in teaching undergraduates when they were graduate teaching assistants, commenting on student papers and leading small discussion groups, which they have not had subsequently as professors.

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15 Jean-Jacque Rousseau, The Government of Poland, trans. Willmoore Kendall (Indianapolis, Bobbs-Merrill, 1972), p. 20.

16 Michael Walzer, Spheres of Justice: A Defense of Pluralism and Equality (New York, Basic Books, 1983), pp. 198-199.

Walzer's criticism of Rousseau's view does not directly address the special and curious case in which the members of the teaching staff, or significant parts of it, are permanent, are qualified in and actively contributing to intellectual disciplines, yet have, not teaching, but the pursuit of an intellectual discipline as their career. Can the special normative character necessary for a school exist in these conditions? It seems unlikely; university students have a claim on those who teach them that they be teachers--well-informed, interesting, creative scholars actively contributing to their disciplines, these things they should be, also, but not as an alternative to being teachers.

Yet if universities conduct undergraduate education in a way that significant numbers of the faculty members experience as purposeless, a wedge is driven between scholarship and teaching, it is difficult for a sense of oneself as a teacher to take root. The universities have a responsibility to make undergraduate education purposeful and so create an environment in which faculty members can grow as scholar-teachers. They will do this if they seek new ways of structuring the integration of teaching and research, ways that empower undergraduate education in places where it competes with the narrower interests of disciplines and departments. Assessment of what undergraduates learn can be part, but not all, of relevant restructurings.

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